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ANALYSIS OF
Origin/Destination Survey
Hwy. 401 & Hwy. 7A
Durham Region

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**Municipal Transportation
Policy Planning Branch**



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**Analysis of Origin/Destination Survey
Highway 401 & Highway 7A in Durham Region**

July, 1987

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A P P E N D I X

ANALYSIS OF ORIGIN/DESTINATION SURVEY

HIGHWAY 401 & HIGHWAY 7A IN DURHAM REGION

1.0 INTRODUCTION

Considering the need for data related to the recreational travel patterns in the vicinity of Durham, Victoria and Peterborough Regions (South-East Ontario area), the Transportation Demand Research Office, Municipal Transportation Policy Planning Branch, Ministry of Transportation of Ontario, decided to conduct an origin - destination survey in Durham Region.

The area was selected because of the many tourist and recreational attractions such as: Port Perry, Lake Scugog, Mosport, The Lake Ontario Waterfront, the Trent-Severn Waterway and the Kawartha Lakes, each of these being strong tourist generators.

The survey took place on Sunday July 12, 1987.

1.1 OBJECTIVES OF THE SURVEY

The main objective was to identify the summer Sunday recreational travel patterns in the area, in order to use this information for the planning of the future Highway 407. It was decided to analyse:

- The Summer Sunday Traffic Characteristics
- The Trip distribution Patterns
- The Trip Length Distribution
- The Auto Occupancy Rate
- The Trip Purpose and Frequency

At the same time, data relative to the daytime use of headlights was collected for the Safety Coordination and Development Office.

1.2 LOCATION OF THE SURVEY

For the purpose of this survey, two stations were located at:

STATION 1: Bennett Road Overpass overlooking west bound traffic on Highway 401.

STATION 2: Highway 7A, west of the intersection with Highway 35.

The location of the survey stations is shown in Figure 1.1

1.3 TYPE OF SURVEY

STATION 1: Licence plate photo survey was conducted on the three west bound lanes, for a 7 hour period from 2 p.m. to 9 p.m.

STATION 2: Licence Plate survey was conducted on the shoulder of the west bound lane for a 7 hour period from 2 p.m. to 9 p.m.

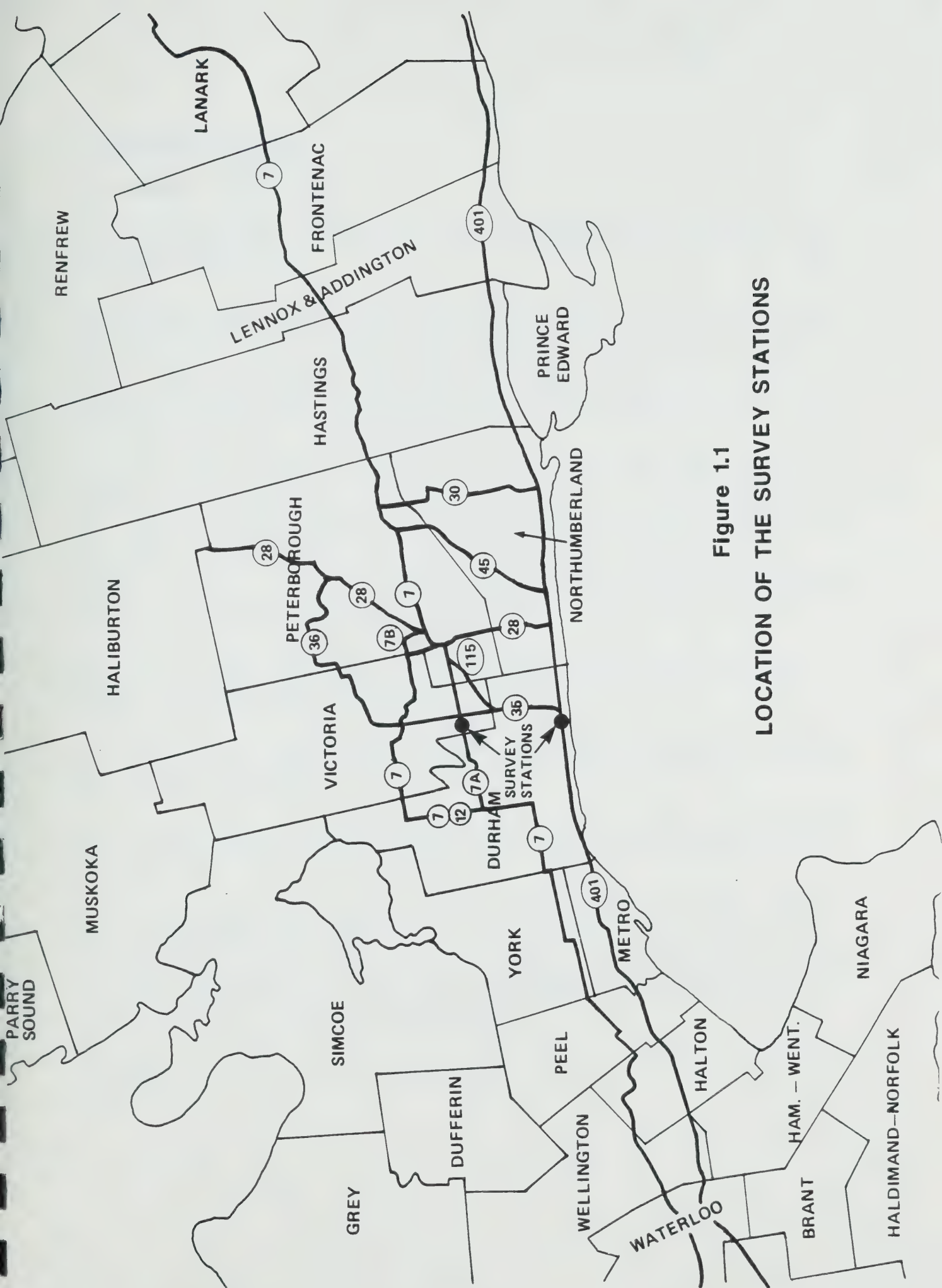


Figure 1.1
LOCATION OF THE SURVEY STATIONS

2.0 SURVEY PROCEDURE

2.1 GENERAL METHODOLOGY

The traffic characteristics on both highways were the most important factors to be considered in selecting the methodology for data collection.

Station 1, was located to collect traffic data from Hwy. 401. High speed and large traffic volumes are typical on this highway, therefore the photo licence plate technique was decided to be used. After the camera captured the licence plate of vehicles travelling west on Hwy. 401, the films were delivered to the photo-lab at MTO for developing, later read through a viewer and the licence plate numbers recorded.

Although this technique allows the collection of large volumes of license plate numbers, the percentage of error is considered high, because sometimes it is very difficult or almost impossible to read the characters of the licence plate from the film, due to different positions of the licence plate on the vehicle, or interference with other vehicles, or poor development of the films. There is also room for mistakes at the moment of reading the films and transferring the information onto the lists for subsequent data entry operations.

Station 2, was located to collect traffic data from Hwy. 7A, where the speed and traffic volumes make the roadside license plate survey technique possible.

The west bound lanes of Hwy. 7A were surveyed by a crew, where one person read the licence number and the other person recorded the number on a sheet.

For roads with lower speed limits and medium volumes of traffic, this technique is highly recommended, because of its simplicity and accuracy. The room for error is considered very low.

Once the characters of the licence plates were on paper, they were keypunched and transferred into computer terminals. The survey data provided the input to a computer program that searched the Master Vehicle Registration File overnight in order to match and print the names and addresses of the registered vehicle owners. All questionnaires were folded and placed in envelopes by the field survey staff.

A name and address label was affixed to each envelope and then mailed out.

2.2 QUESTIONNAIRES

Copies of the questionnaire for both surveys are show in appendix A.

2.3 CONFIDENTIALITY

The vehicle owner receiving a questionnaire, was advised that the answers provided would be treated in the strictest confidence. After the survey, all records of license plate numbers, names and addresses of vehicle owners collected for the survey were destroyed.

2.4 RESPONSE

For station 1, of the 7569 questionnaires mailed out, 2822 representing 37.28% were returned, 322 of them with uncodeable responses. In all, 2500 questionnaires representing 33.03% were properly completed and returned.

For station 2, of the 1717 questionnaires mailed out 828 (48.22%) were returned, of which 82 were uncodeable. In all 746 questionnaires representing 43.4% were properly completed and returned.

The sampling rates of the total vehicle population in the 7 hour period are tabulated.

Station	Classification	Counts	Codeable Answers	Sample %
1	Hwy. 401	22984	2500	10.9
2	Hwy. 7A	3110	745	24.0

3.0 SURVEY ANALYSIS

3.1 GENERAL METHODOLOGY

The returned questionnaires were counted and sent to a consultant for coding and data entry onto a floppy diskette. The data available on the floppy included records with the following fields:

Auto Code

Sequence Number

Origin and Destination

Trip Purpose

Number of Persons in the Car

Trip frequency

Use of Headlamps

The origin/destination data was first converted to longitudinal and latitudinal coordinates using the geocoding program, that allows the user to type in a municipality and address, intersection or monument corresponding to the raw data given in the questionnaire. The program scans the corresponding data files and responds with the UTM co-ordinates.

The Highway Planning Support Section received this floppy, analysed it and separated it in two sets of data, for further analysis. The first set containing the O-D information, was extracted in order to allocate the UTM co-ordinates into the proper PTZ and TARMS zones. This information was used to create the respective trip tables.

The second set containing the rest of the information, was transferred to a Lotus 123 program in order to analyse it using the data sort commands.

This provided us with two files. One for Hwy. 401, with 2499 records, and the other for Hwy. 7A with 746 records. These records could be sorted and analysed in any possible combination, as required.

The graphics and some of the tables were prepared using the Freelance Program.

3.2 EXPANSION FACTORS

As classification counts were made by hour for the survey period, expansion factors were calculated by hour for each station. Thus, survey samples were factored up to the total classification counts. Tables 3.1 and 3.2 show the expansion factors by hour for Hwy. 401 and Hwy. 7A respectively.

On average, on Hwy. 401 the auto survey sample was about 11% of the west bound traffic. On Hwy. 7A, this percentage goes up to almost 24% of the west bound traffic.

Analysing the number of responses, indicates that Hwy. 7A had a very high response, compared to Hwy. 401 and also other surveys conducted in the past. Questionnaires were returned for almost one in every four cars passing the survey station. This average is better for mid afternoon hours, for which responses were received for almost every third car.

Hwy. 401 had a low response, on average codeable questionnaires were received for 1 in every 10 cars passing the survey station. This average improves for the mid afternoon period, with a response of one in every eight cars, but late in the evening responses were received for only one in 27 cars.

As a recommendation, it appears to be appropriate to indicate that this kind of survey should be taken only up to the 20th. hour, because in both stations, the number of responses decreases considerably for the period after the twentieth hour (8.00 p.m.).

3.3 SUMMER SUNDAY AND HOURLY DISTRIBUTION OF AUTO TRAFFIC

Due to the many tourist attractions in the area, and the importance of both highways (401 and 7A) the summer Sunday traffic volumes are one of the peak volumes of the year.

According to machine counts, Sunday traffic on Hwy. 401 could be 1.69 times higher than summer weekdays. On Hwy. 7A, it could be 1.94 times higher, representing capacity conditions for both highways.

T A B L E 3.1

EXPANSION FACTORS

STATION ON HIGHWAY 401

Hour Ending	Classification Counts	Codeable Response	Factors
15	2374	224	10.60
16	2720	364	7.47
17	3441	475	7.24
18	3548	456	7.78
19	3487	433	8.05
20	3784	413	9.16
21	3630	134	27.09
TOTAL	22984	2499	9.20

T A B L E 3.2**EXPANSION FACTORS****STATION ON HIGHWAY 7A**

Hour	Classification	Codeable	Factors
Ending	Counts	Response	
15	277	110	2.52
16	321	104	3.09
17	361	100	3.61
18	400	107	3.74
19	534	125	4.27
20	600	121	4.96
21	617	79	7.81
TOTAL	3110	746	4.17

Figure 3.2 and 3.3 shows a graphic representation of the traffic volumes during a summer week for Hwy. 401 and 7A respectively.

The hourly distribution of the traffic volumes during the summer Sundays, according to the machine counts, shows that 85% of the daily trips on the west bound Hwy. 401, west of Bennett Road, occur during the p.m. hours (12.00 - 24.00 hours). The peak hour is around the 20th. hour with 9% of the daily volumes. Analysing the volumes on Hwy. 7A, it was found that 70% of the trips occurred during the afternoon hours. The peak hour is around the 19th. hour with 10.5% of the daily volumes.

Table 3.3 shows the disaggregate volumes by hour for each survey station

3.4 TRIP DISTRIBUTION PATTERNS

The analysis of origin/destination trips gives a disaggregate view of the travel patterns. As indicated in Section 3.1, the O-D trips from the survey data were geo-coded and then converted to the 1321 TARMS zone system.

Hwy. 401.- The analysis of the trips at this survey station shows 46 origin TARMS zones 27 of these origin zones represent only 3.4% of the total trips. The other 19 origin zones representing 96.6% were mainly from the Counties of Peterborough, Hastings and Northumberland. In addition, there were 6% of the trips with origins in the Ottawa-Carleton Region and 5.5% of the trips with origins outside the province of Ontario. Trip origins at TARMS zone level by percentage are shown in Table 3.4.

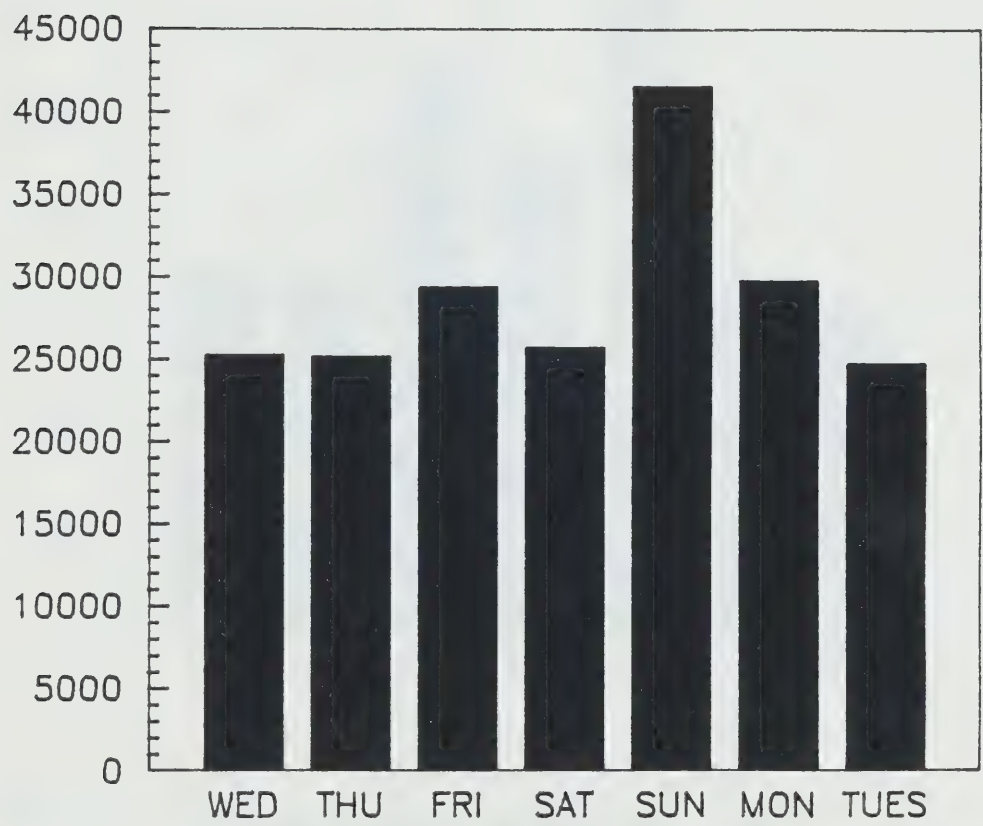
TARMS from 1 to 400 are located in Metro Toronto, 480 is located in Whitby, 560 to 594 in Newcastle, 632 in Newmarket and the others outside the GTA as shown in Figure 3.6

The destinations were more dispersed. For analysis, the TARMS zones were grouped into regions. Almost 50% of the trips had Metropolitan Toronto as their destination. In Metro Toronto, the most important destinations were Scarborough, south of Hwy. 401, with 11.4 % of the trips, and the City of Toronto with 10.2% of the total trips. Durham Region and Peel Region represented 16.3% and 9.6% respectively. Trip destination at municipality and regional levels by percentage are shown in Table 3.5.

Figure 3.4 shows in percentage the origins and the most important destinations of all trips going through this station.

FIGURE 3.2

DAILY SUMMER VOLUMES
WESTBOUND HWY. 401 WEST OF BENNETT RD.

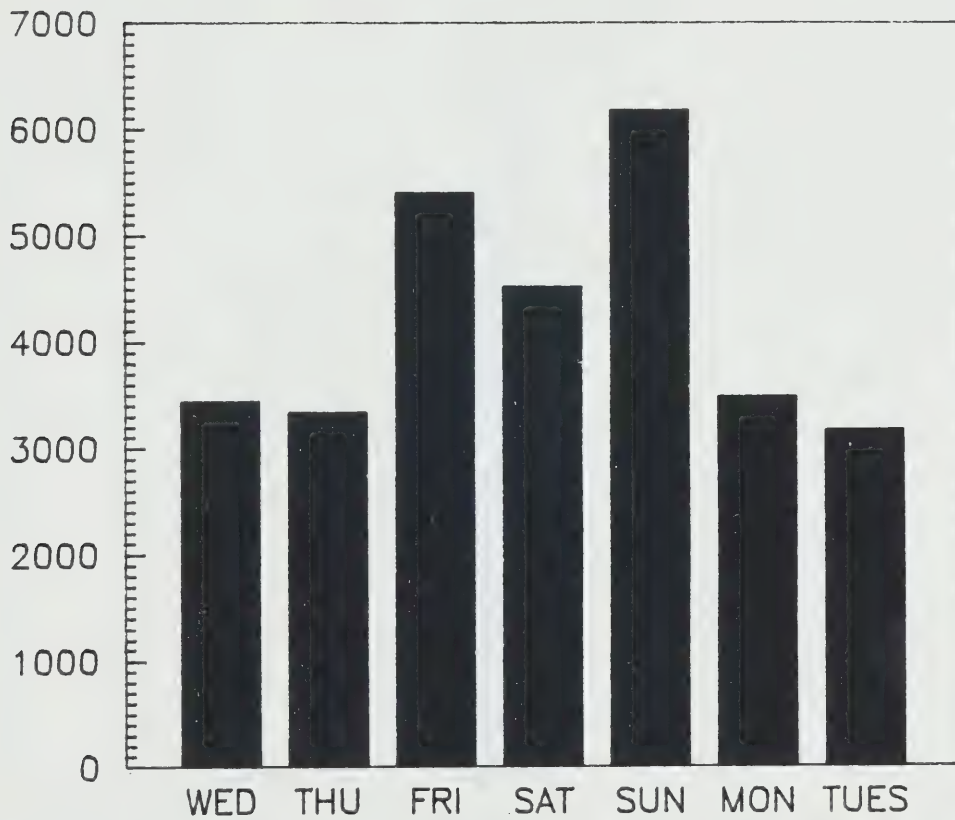


SOURCE: 24 Hour machine counts (July 87)

FIGURE 3.3

DAILY SUMMER VOLUMES

HWY. 7A WEST OF HWY. 35



SOURCE: 24 Hour machine counts (July 87)

T A B L E 3.3

HOURLY SUNDAY SUMMER TRAFFIC ON
HIGHWAY 401 AND HIGHWAY 7A

Hour Interval	Highway 401 west (West of Bennett Rd.)	Highway 7A (West of Hwy. 35)
0 - 1	401	69
1 - 2	312	54
3 - 4	138	13
4 - 5	103	10
5 - 6	157	13
6 - 7	240	11
7 - 8	395	37
8 - 9	567	81
9 - 10	882	157
10 - 11	1341	225
11 - 12	1662	299
12 - 13	1812	329
13 - 14	2256	458
14 - 15	2616	455
15 - 16	3079	527
16 - 17	3290	579
17 - 18	3641	557
18 - 19	3576	648
19 - 20	3856	610
20 - 21	3700	509
21 - 22	3634	322
22 - 23	3090	139
23 - 24	1563	54
24 Hour Total	42616	6189

TABLE 3.4

TRIP ORIGINS FOR STATION ON HWY. 401

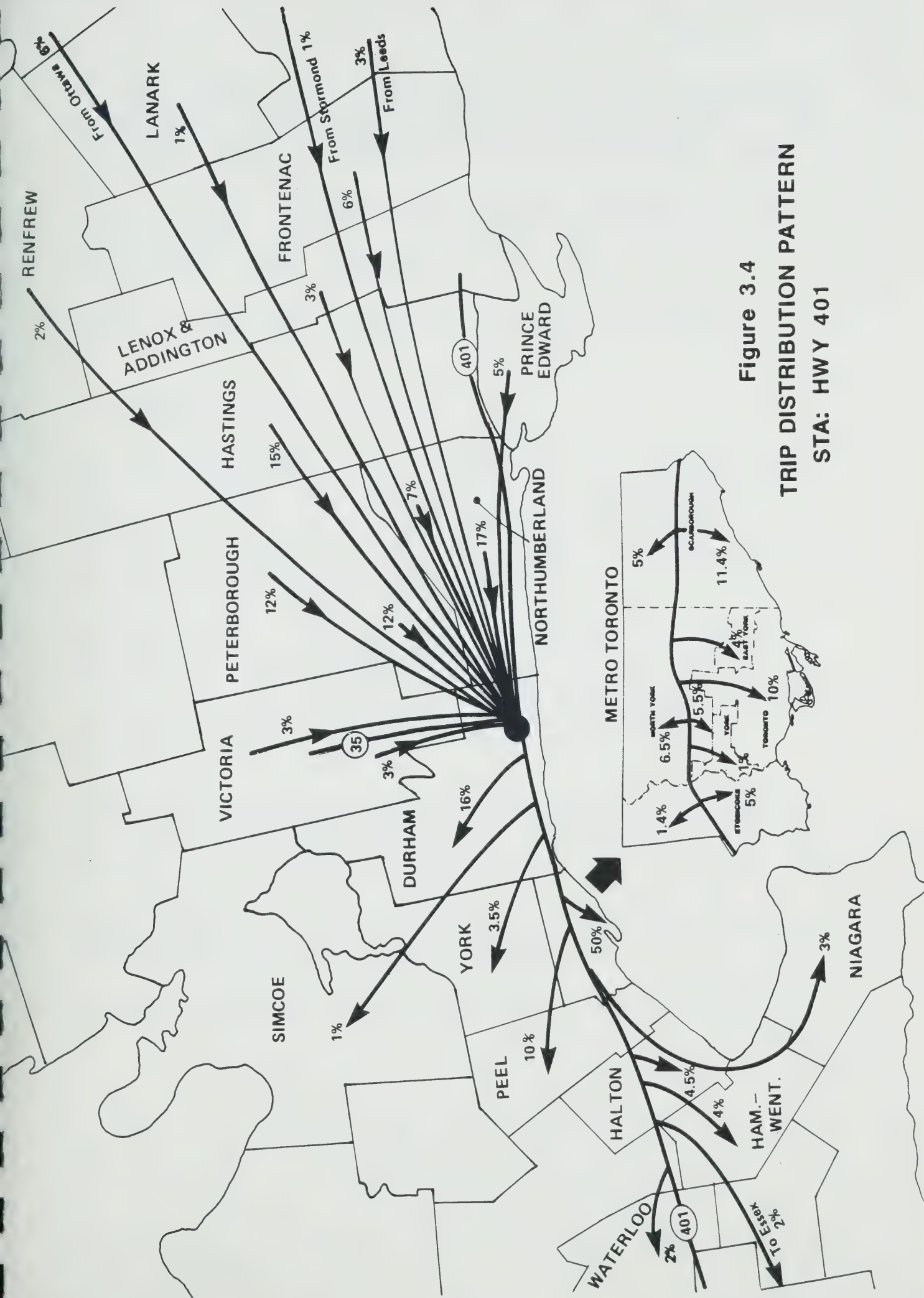
TARMS ZONE	TRIPS	PERCENTAGE
335	7	-(*)
380	8	-
480	7	-
560	7	-
562	18	-
564	11	-
571	19	-
574	7	-
575	16	-
582	7	-
583	26	-
584	61	-
585	137	-
586	47	-
587	160	-
590	226	1.00
591	26	-
592	18	-
594	9	-
632	7	-
1267	8	-
1271	15	-
1280	9	-
1292	8	-
1294	54	-
1296	707	3.08
1297	711	3.10
1298	2079	9.08
1299	2725	11.90
1300	2301	10.05
1301	489	2.14
1302	3416	14.92
1303	1647	7.19
1304	1196	5.22
1305	723	3.16
1306	554	2.42
1307	1364	5.96
1308	761	3.32
1309	311	1.35
1310	1409	6.15
1311	296	1.30
1312	25	-
1313	34	-
1316	978	4.27
1317	222	1.00
1318	26	-
T O T A L	22892	100.00

(*) The total of all trips marked with (-) represents 3.40%

T A B L E 3.5

DESTINATIONS OF TRIPS
STATION ON HIGHWAY 401

DESTINATION	TRIP %
Metropolitan Toronto	50.0
City of Toronto	10.2
North York, south of 401	5.5
East York	4.0
Etobicoke, south of 401	4.6
Etobicoke, north of 401	1.4
York	1.1
North York, north of 401	6.5
Scarborough, south of 401	11.4
Scarborough, north of 401	5.0
Durham Region	16.3
York Region	3.5
Peel Region	10.2
Halton Region	4.5
Hamilton- Wentworth Region	4.0
Essex Region	2.0
Niagara Region	3.4
Waterloo Region	2.1
Simcoe Region	1.2
Others	2.5
T O T A L	100.0



7A.- The analysis of this survey shows a very high concentration of trip origins. Ninety-one percent of the trips focus in only 7 TARMS zones. Almost 50% of the trips had the Peterborough area as origin. Table 3.6 shows the origins in TARMS zones, number of trips and percentage.

From the analysis of destinations of trips going through this station, 35% of all the trips were destined to Metro Toronto, 27% to Durham Region and 18% to York Region. Table 3.7 provides a disaggregate view of destinations.

Figure 3.5 shows, in percentages the origins and principal destinations of all the trips going through this station.

3.5 POTENTIAL USERS OF HWY. 407

Hwy. 407 when completed will be an east-west freeway, north of Metropolitan Toronto, running between Hwy. 401 in Milton and Hwy. 35/115 in Durham. As this new freeway will be parallel to Hwy. 401, it is possible to assume some traffic diversion will occur from Hwy. 401 to Hwy. 407. The amount, or percentage, of diversion will depend on the level of service provided by each of the highways, the north-south links between them and, of course, the origin and destination of the trips.

Considering equal level of services and the trip origins, (see Figure 3.6), it is possible to suggest that all the trips originating in TARMS zones 1296, 1297, 1299, 1300, and 1301 (29%) actually using Hwy. 401 will be divertible to Hwy. 407, because it is closer than Hwy. 401. It is also possible to say that all the trips on Hwy. 7A will use future Hwy. 407, especially if new north-south links, with adequate level of service, are implemented.

Considering the destinations, it is possible to suggest that all the trips, north of Hwy. 401, in the Durham, York, Peel Regions and Metro Toronto will use Hwy. 407. This represents a 26% diversion from 401 and a 64% from Hwy. 7A. Again, it will depend on level of service and north-south links.

Trips with origins other than those mentioned above, and destinations south of Hwy. 401, or outside the Durham, York and Peel Region, will probably remain on Hwy. 401.

Figure 3.7 shows a graphic representation of potential diversion to Hwy. 407

T A B L E 3.6

TRIP ORIGINS FOR STATION ON HWY. 7A

TARMS ZONE	TRIPS	PERCENTAGE
509	3	-(*)
532	3	-
559	5	-
582	4	-
590	3	-
596	9	-
597	4	-
642	4	-
671	8	-
683	3	-
1195	4	-
1266	3	-
1269	4	-
1271	8	-
1272	5	-
1275	4	-
1292	3	-
1294	6	-
1296	421	13.25
1297	488	15.36
1298	21	0.66
1299	706	22.23
1300	705	22.20
1301	107	3.37
1302	331	10.42
1303	28	0.90
1304	4	-
1305	24	0.75
1306	39	1.22
1307	30	1.00
1308	8	-
1309	22	0.76
1310	132	4.16
1311	7	-
1313	4	-
1316	16	0.50
T O T A L	3176	100.00

(*) The total of all trips marked with (-) represents 3.28%

T A B L E 3.7

DESTINATIONS OF TRIPS
STATION ON HIGHWAY 7A

DESTINATION	TRIP %
Metropolitan Toronto	35.0
City of Toronto	4.3
North York, south of 401	3.3
East York	1.9
Etobicoke, south of 401	4.4
Etobicoke, north of 401	1.2
York	1.1
North York, north of 401	5.6
Scarborough, south of 401	8.4
Scarborough, north of 401	4.3
Durham Region	27.3
York Region	18.4
Peel Region	7.5
Halton Region	2.3
Hamilton Wentworth Region	0.6
Essex Region	0.5
Niagara Region	0.2
Waterloo Region	2.1
Simcoe Region	2.0
Others	3.5
T O T A L	100.0

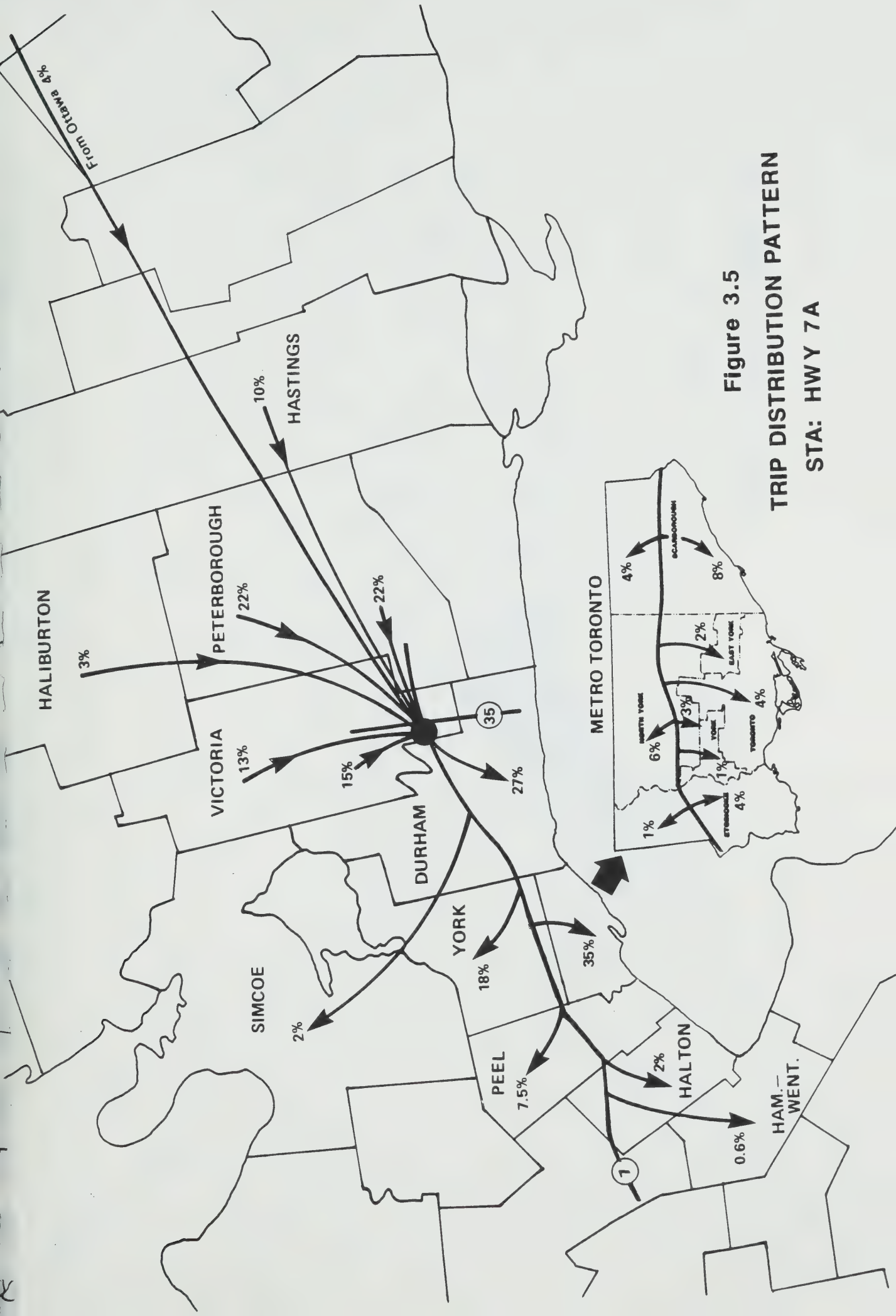


Figure 3.5
TRIP DISTRIBUTION PATTERN
STA: HWY 7A

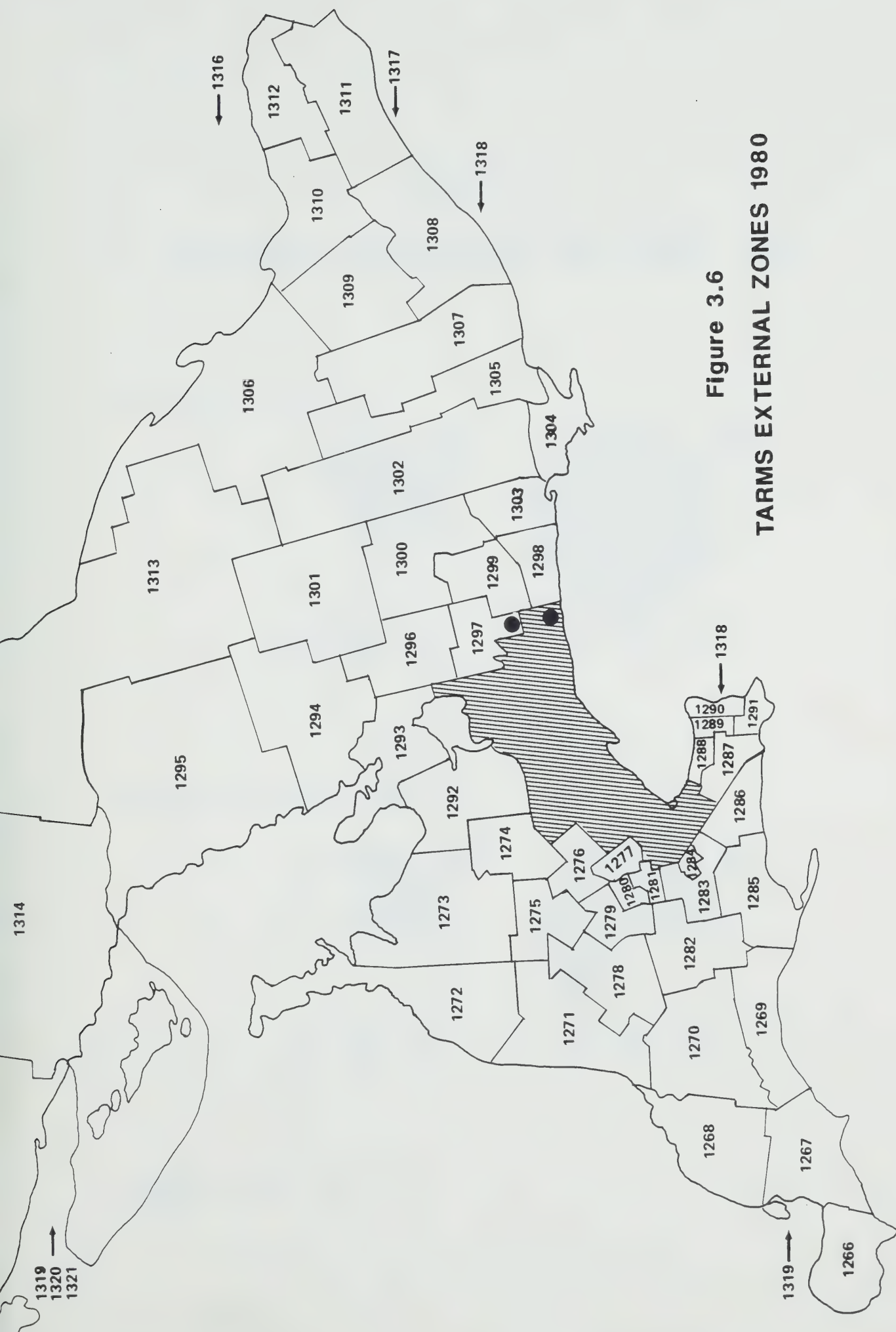
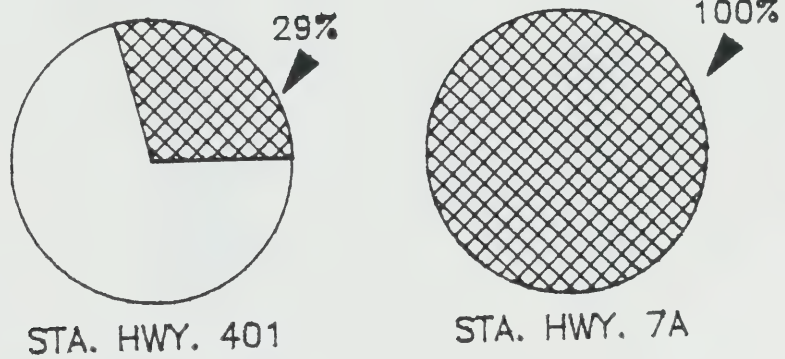


Figure 3.6
TARMS EXTERNAL ZONES 1980

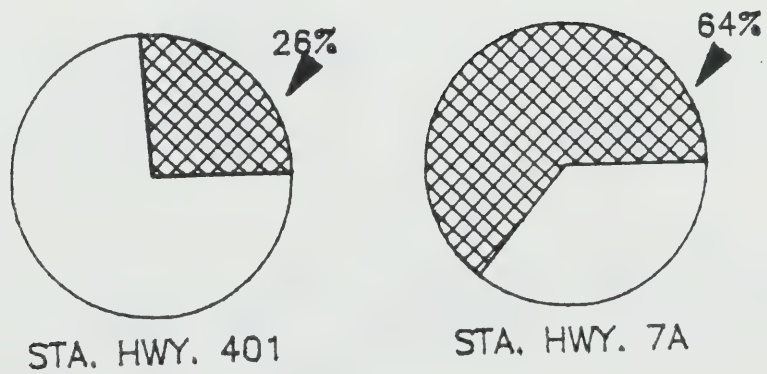
FIGURE 3.7

TRAFFIC DIVERSION TO HWY. 407

CONSIDERING ORIGINS



CONSIDERING DESTINATIONS



 TO HWY. 407

3.6 TRIP LENGTH DISTRIBUTION

The distance between the most frequent origin and destination pairs were measured in order to assess the distance travelled for a Sunday recreational trip in this area. The distance represents a one-way trip and was measured from the center of the origin zone to the center of the destination zone. The average distances are as follows:

To station on Highway 401

From TARMS zone	Km.
1302	80
1299	39
1300	60
1298	29
1303	38
1304	83
1310	333
1307	193

From station on Highway 401 to:

Metro Toronto	
City of Toronto	81
North York	70
East York	70
Etobicoke	84
York	72
Scarborough	54
Durham Region	26
York Region	71
Peel Region	99
Halton Region	112

Therefore, having TARMS zone 1302 as the most common origin, and Metro Toronto as the most common destination, it is possible to say that the average trip length was 152 Km., and that almost 10% of the trips travelled over 400 km.

To station on Hwy. 7A

From TARMS zone	Km.
1299	19
1300	40
1297	20
1296	63
1302	104

From station on Hwy. 7A to :

Metro Toronto	
City of Toronto	120
North York	109
East York	109
Etobicoke	121
York	110
Scarborough	86
Durham Region	30
York Region	109
Peel Region	137
Halton Region	150

Therefore, for station on Hwy. 7A, having TARMS zone 1299 as the most common origin and Metro Toronto as the most common destination, it is possible to say that the average trip length was 139 km.

The fact that on Hwy. 401 the distances travelled are longer than on Hwy. 7A was expected, because of the importance of Highway 401 as the main highway in Ontario.

3.7 AUTO OCCUPANCY

The average occupancy rates were 2.46 and 2.42 persons per car on Hwy. 401 and Hwy. 7A respectively. This average is higher than in other commuter surveys, but it was expected due to the recreational nature of the trips.

3.8 AUTOMOBILE TRIP PURPOSE

Four trip purposes were identified in the questionnaires. The following shows the percentage distribution by categories for each of the stations.

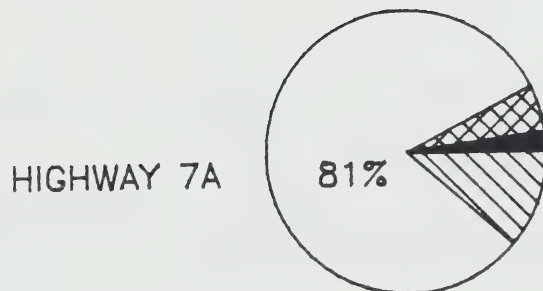
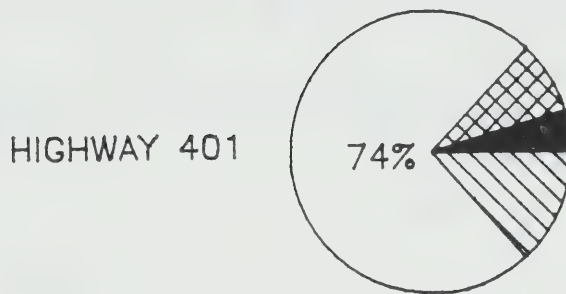
In both cases the main purpose was recreational with 74% and 81% for station on Hwy. 401 and on Hwy. 7A respectively.

Purpose	Highway 401		Highway 7A	
	Response	%	Response	%
Work	114	4.6	16	2.1
Pers. Business	208	8.3	40	5.4
Recreational	1842	73.7	604	81.1
Others	336	13.4	85	11.4
TOTAL	2500	100.0	745	100.0

For a graphic representation see figure 3.8

FIGURE 3.8

TRIP PURPOSE



WORK



RECREATIONAL



PERS.BUSINESS



OTHERS

3.9 TRIP FREQUENCY

The frequency of trips in percentage in terms of times per week and times per month is shown in table 3.8.

For the station on Highway 401, 41% answered they made this trip less than once per month; 17% said they travelled once a month; 17% once a week; and 13% reported two times per month. Other answers were not significant.

For the station on Hwy. 7A, 30% said they made this trip less than once per month; 26% reported once a week; 16% once a month and 14% twice per month. Other answers were not significant.

To know if these trips took place only during the summer season, a question about seasonal travel was asked. The answers were as follows:

	Hwy. 401	Hwy. 7A
Summer only	47.2%	51.7%
All seasons	47.0%	43.9%
Blank	5.8%	4.4%
TOTAL	100.0%	100.0%

3.10 USE OF HEADLAMPS DURING DAYLIGHT HOURS

Safety Coordination and Development Office, Transportation Regulation Development Branch, requested the addition of a question to our survey relative to use of headlights during daylight hours. Five possible answers were added to the questionnaire, the results were as follows:

	Hwy. 401	Hwy. 7A
Always	10.6%	10.1%
Often	27.5%	26.4%
Infrequently	19.4%	16.1%
Never	2.2%	2.8%
Only in bad weather	40.3%	44.6%
TOTAL	100.0%	100.0%

T A B L E 3.8

TRIP FREQUENCY

	HIGHWAY 401	HIGHWAY 7A
Less than once per month	41 %	30 %
One time per month	17 %	16 %
Two times per month	13 %	14 %
Three times per month	7 %	8 %
One time per week	17 %	26 %
Two times per week	2 %	5 %
Other answers	3 %	1 %
TOTAL	100 %	100 %

The answers from both survey stations were very similar, most of the people, 40% and 45% respectively, have their lights on during the day only in bad weather conditions; At the other end, less than 3% said that they never use headlamps during the day.

Some people also sent comments regarding the use of headlamps as an accident reduction safety measure.

The most common answers were:

"...I can see oncoming traffic better with lights on..."

"...Excellent idea, but I keep forgetting to turn off the lights..."

"...For highway driving, headlight use improves safety, for city driving it is not that necessary..."

"...Use of headlamps is a definite aid... but the installation of automatic light switches in cars as a standard feature should be first..."

In general, it is possible to say that few drivers are against the use of headlamps during the day, but the main concern is to remember to turn them off.

4.0 SUMMARY OF FINDINGS

Two techniques were applied to collect the data. The photo licence plate technique on Hwy. 401 and the roadside license plate survey technique on Hwy. 7A.

Geocoding, Lotus 123, and Freelance programs were used to analyse the returned questionnaires.

The major findings of this analysis are highlighted under their relevant section of this text as follows:

SECTION

MAJOR FINDINGS

2.4 Response

The codeable responses as a percentage of the mailed out questionnaires are as follows:

Highway 401: 33%

Highway 7A: 43%

3.2 Expansion Factors

Variable according to the hour. The number of responses drops considerably when people travelling after 8.00 p.m. were asked. The expansion factor for that hour is very high and as a result some bias maybe introduced when analysing the data.

	Hwy. 401	Hwy. 7A
Lowest Factor	7.24	2.52
Highest Factor	27.09	7.81
Average	9.20	4.17

3.3 Summer Sunday and Hourly Distribution of Traffic

Sunday traffic on Hwy. 401 and Hwy. 7A could be 1.69 and 1.94 times higher than summer weekdays respectively.

Summer Sunday volumes represent capacity conditions for both highways

On Hwy. 401, 85% of the daily trips occur between the 12.00 and 24.00 hours. Peak hour (9%) is around the 20th. hour.

On Hwy. 7A, 70% of the trips occurred during the 12.00 and 24.00 hours. Peak hour (10%) is around the 19th. hour.

3.4 Trip Distribution Patterns

Hwy. 401: 53% of the trips originated in the Peterborough, Northumberland and Hastings Counties; 6% were from Ottawa; 5% mentioned origins outside the Ontario province.

The destinations were more dispersed, 50% went to Metro Toronto; Durham and Peel region represented 16% and 9% respectively. For Metro Toronto, 11% were destined to Scarborough, south of Highway 401.

Hwy. 7A: 72% of the total trips mentioned Peterborough and Victoria Counties as origins. There were very few trips from the southern part of the region where Hwy. 401 is closer. 4% mentioned Ottawa as origin.

As with Hwy. 401, on Hwy. 7A the destinations were dispersed too. 35% went to Metro Toronto, 27% to Durham Region and 18% to York Region.

3.5 Potential Users of Future Hwy. 407

As a parallel route to Hwy. 401, the diversion will depend on the level of service, the north-south links, and the origin-destination of the trips.

Considering origins: 29% of the actual trips using Hwy. 401 will possibly be diverted to Hwy. 407. 100% of the trips using Hwy. 7A will be diverted to Hwy. 407.

Considering destinations: 26% of the trips using Hwy. 401 and 64% of the trips using Hwy. 7A will possibly be diverted to Hwy. 407.

3.6 Trip Length

For station on Hwy. 401, the most common distance travelled was 152 Km.

For station on Hwy. 7A, the most common distance travelled was 139 km.

3.7 Auto Occupancy

Average occupancy was 2.46 and 2.42 persons per car on Hwy. 401 and 7A respectively. This high rate was expected due to the recreational nature of the trips.

3.8 Trip Purpose

74% and 81% on Hwy. 401 and Hwy. 7A respectively, mentioned "recreation" as the main purpose of the trip.

3.9 Trip Frequency

On Hwy. 401, 47% of the total respondents indicated that they made this trip only in the summer. Asked about the frequency, the answers were:

- 41%: less than once per month.
- 17%: once a week.
- 13%: two times per month.

On Hwy. 7A, 52% indicated that they made this trip during the summer season only. Asked about frequency, the answers were:

30%: less than once per month.

26%: once a week.

16%: once a month.

14%: twice per month.

3.10 Use of Headlamps

40% and 46% on Hwys. 401 and 7A respectively, mentioned they use day headlamps only in bad weather.

From the comments, no one disagrees with the use of day headlamps, but most of them suggest the need for installation of automatic light switches in cars as a standard feature.

APPENDIX

Dear Sir or Madam:

The Ministry of Transportation and Communications is conducting a traffic survey to establish travel characteristics on the Provincial transportation network. This is a routine traffic survey used for monitoring changing traffic conditions. We request your co-operation in providing information which is essential for planning improved transportation services.

Your assistance, by completing the following questionnaire and returning it as soon as possible in the envelope provided, will be greatly appreciated. No postage is required.

YOUR ANSWERS WILL BE TREATED IN THE STRICTEST CONFIDENCE. YOU NEED NOT ANSWER ALL QUESTIONS IF YOU DO NOT WISH TO. PLEASE RETURN THE QUESTIONNAIRE

Thank you for your assistance and co-operation.

Yours truly,

G. H. Johnston
G. H. JOHNSTON
Assistant Deputy Minister
Provincial/Municipal Transportation

If you were driving your car westbound on Hwy. 7A, West of Hwy. 35 on July 12, 1987, please answer the following questions about your trip, and return the questionnaire in the envelope provided. If a person other than yourself was driving the car at that location, please ask that person to complete and return the questionnaire.

1. Please check(✓) the time of day you were driving at the above location
2-3 pm _____; 3-4 pm _____; 4-5 pm _____; 5-6 pm _____;
6-7 pm ☒; 7-8 pm _____; 8-9 pm _____;
2. Where did your trip begin? Buckhorn;
Address (or nearest road intersection) _____;
City/Town/Village _____
3. Where did your trip end? Stich - Bathurst;
Address (or nearest road intersection) _____;
City/Town/Village Windsor
4. What was the purpose of the trip? Please check (✓) one of the following:
1. Work _____; 2. Personal Business _____;
3. Recreation ☒;
4. Other (please specify) _____;
5. How many people, including the driver, were in the car? 2;
6. How often do you make this same trip?
2 time(s) per week; or _____ time(s) per month
7. Please indicate (✓) if you make this trip in the Summer only _____; or all seasons ☒;
8. How often do you travel with headlamps on during daylight hours? Check one (✓) of the following:
1. Always ☒; 2. Often _____;
3. Infrequently _____; 4. Never _____;
5. Only in bad weather _____;
9. We are interested in public opinion regarding the use of daytime driving lights as an accident reduction safety measure. If you have any comments relative to this or to the traffic survey, please write them on the reverse of this form.

MTC USE ONLY

1	2	3	4	5
1	3	7	0	3

6	7

8	9
1	9

10										19
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20										29
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30	31
0	3

32
2

33	35
1	02

36
2

37
1

AUTO

